tude $3^m.0$, thus yielding a mean value of $0''.0100$ for the parallax of an eighth magnitude star. According to Kapteyn's formula $\bar{\pi} = 0''.0158\ (0.78)^{m-5.5}$ the mean parallax for a star of visual magnitude $8^m.0$ is $0''.0085$. Although the agreement is very close, we must not overestimate its weight, on account of the uncertainty of the color-index for the stars with high luminosity. If, for instance, we disregard the first three dots in figure 2, we can, without straining the figures, arrive at a color-index of $0^m.56$ for $M = 3^m.8$, corresponding to a parallax of $0''.0144$ or 70% more than Kapteyn's value. A color-index of $0^m.28$ (F0) might be reached at $m = 1^m.0$ and $M = 0^m.0$ giving a mean parallax of $0''.063$ for a first magnitude star, whereas Kapteyn finds $0''.048$.

1922, January 3. WILLEM J. LUYTEN.

REMARKS ON H. D. CURTIS' PAPER ON STELLAR LUMINOSITIES

The interesting paper by Heber D. Curtis[1] in the last number of this journal, with its excellent material of absolute magnitudes, suggests a few comments. First, it may be pointed out that the well-known relative scarcity of F and early G giants is even more striking when compared with the excess of "supergiants" of these classes (spectroscopic absolute magnitudes for *Cepheids*). This tends to make the diagram look as if the distribution of absolute magnitudes follows two parallel lines. The higher one of these two lines may link up with the B-supergiants, such as *β Orionis, α Crucis,* and the Walf-Rayet stars, to some of which Lundmark[2] assigns absolute magnitudes of $-4^m.0$.

In connection with the probable parallaxes of a $9^m.5$ star, which Curtis derives on page 38 of his paper, it may be remarked that, although in space the dwarfs greatly outnumber the giants. this may not be applied when dealing with stars of the same apparent magnitude. If we take the number of giants to be only 1% of the total, and assume the mean absolute magnitudes of giants and dwarfs to be $+ 0^m.8$ and $+ 6^m.0$ respectively (which holds for the K-stars), both with a Gaussian distribution, then

[1] *Publ. A. S. P.* **34**, 33, 1922.
[2] *Publ. A. S. P.* **34**, 40, 1922.

the dwarfs form only 40% of the total number at apparent magnitude $9^m.9$, and 18% at $6^m.0$.

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ADDITIONAL NOTE ON FAINT EARLY-TYPE STARS WITH LARGE PROPER-MOTIONS

Besides the list already published in this journal,[1] three even more striking cases have been found of white stars with low apparent magnitude and large proper-motion.

NAME	R.A.	1900.0 DEC.	MAG.	SP.	P.M.
Wolf 1056	$0^h33^m29^s$	$+29°47'.3$	$11^m.0$	A3	1".69
C. P. D.—47°7499	15 50 15	-47 20 .6	9 .5	B9	0 .85
C. P. D.—40°7356	16 25 32	-40 6 .0	10 .1	A0	1 .05

The spectrum of the first star was determined by Wolf,[2] but his estimate may differ materially from the Harvard classification. For the two C. P. D. stars, no stars of the same brightness are close to them. If we assume that these stars have the mean absolute magnitude of a class A0 star, *i. e.*, $+1^m.2$, then the linear motions in space corresponding to the proper-motions are 7300,1800,3000 km. per sec. respectively. If on the other hand, we assume the velocity not to be higher than 100 km. per sec., which is still very high for A-stars, we find as upper limits for the absolute magnitudes $+10^m.5$, $+7^m.5$, and $+8^m.6$ respectively, quite comparable with that of o^2 *Eridani* B ($+11^m.2$).

These considerations make it probable that the three early-type stars are dwarfs, and also that they will prove interesting objects for both radial velocity and parallax observers in the southern hemisphere.

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THE TOTAL RADIATION FROM o CETI

In the course of some stellar observations with vacuum thermocouples, measures have been made with the Hooker telescope of the heat received from o *Ceti*. On December 6, 1921, the

[1] *Publ. A. S. P.*, **34**, 54, 1922.
[2] *A. N.*, **210**, 293, 1919.